S-Video Balun
S-Video with Dual-Audio Balun
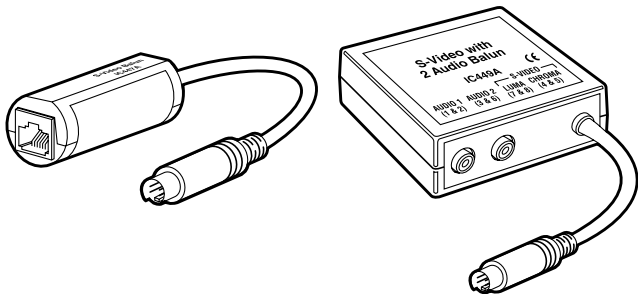
FEDERAL COMMUNICATIONS COMMISSION
AND INDUSTRY CANADA
RADIO-FREQUENCY INTERFERENCE STATEMENTS

Class B Digital Device. This equipment has been tested and found to comply with the limits for a Class B computing device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or telephone reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult an experienced radio/TV technician for help.

Caution: **Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.**

To meet FCC requirements, shielded cables are required to connect this device to other Class B certified devices.

This digital apparatus does not exceed the Class B limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe B prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

TRADEMARKS USED IN THIS MANUAL

Any trademarks mentioned in this manual are acknowledged to be the property of the trademark owners.

1. Specifications

Environment: S-Video equipment

Devices: DVD, VCR, monitors, LCD projectors, CCD cameras, video switchers, sequencers, multiplexors, and other S-Video equipment

Transmission: Transparent to the user

Bandwidth: Video: DC to 6 MHz;
Audio: 100 Hz to 16 kHz

Impedance: S-Video: 75 ohms;
Audio 600 ohms minimum

Maximum Input (Audio or Video): 1.1 Vp-p

Insertion Loss (S-Video): Less than 2 dB per pair over the frequency range

Return Loss: Better than 15 dB over the frequency range

Common Mode Rejection: Greater than 40 dB over the frequency range

Maximum Distance: 1000 ft. (30.5 m) over CAT5 twisted-pair cable

Cable Required: 24 AWG or lower solid copper twisted-pair wire
   (UTP);
Impedance: 100 ohms at 1 MHz;
Maximum Capacitance: 20 pF/ft.;
Attenuation: 6.6 dB/1000 ft. at 1 MHz;
Note that up to 12 feet (3.7 m) of audio cable
   (not included) may be used with this balun

Connectors: IC447A: (1) 4-pin mini-DIN, (1) RJ-45;
IC449A: (1) 4-pin mini-DIN, (2) RCA audio jacks,
   (1) RJ-45

Pin Configuration: Reverse polarity sensitive;
S-Video Luma: Pins 7 & 8;
S-Video Chroma: Pins 4 & 5;
(IC449A only) Audio 1: Pins 1 & 2;
(IC449A only) Audio 2: Pins 3 & 6

Enclosure: Fire-retardant plastic

Temperature Tolerance:
Operating: 32 to 131°F (0 to 55°C);
Storage: -4 to +185°F (-20 to +85°C)

Humidity Tolerance: Up to 95% noncondensing

Size: IC447A: 1"H x 1"W x 1.9"D (2.5 x 2.5 x 4.8 cm),
   with a nondetachable 5" (12.7-cm) S-Video cord;
IC449A: 2.4"H x 2.25"W x 1"D (6.1 x 5.7 x 2.5 cm),
   with a nondetachable 5" (12.7-cm) S-Video cord

2. Introduction

With pairs of S-Video with Dual-Audio Baluns or S-Video Baluns, you can transmit a single S-Video signal point-to-point across Category 5 unshielded twisted-pair (UTP) cable, which is already wired into most commercial sites. The balun near the video source takes a single S-Video signal from the source, converts it, and transmits it over UTP cable to the other balun, which outputs it to its destination. This lets you place or move your S-Video equipment anywhere you have a modular wall outlet.

These baluns are designed for use with modular equipment and flexible configurations. Compatible devices include S-Video video cameras and monitors, DVD and videocassette players and recorders, video and LCD projectors, CCD cameras, video switchers, sequencers, multiplexors, and other S-Video equipment. Applications include classroom video distribution, overhead projector systems, computer-training systems, and tradeshow computer-demo systems. The baluns also work in conjunction with the Video CCTV-A/V Hub (IC445A) to allow S-Video programming to be distributed via UTP.

These baluns must be used in pairs.

3. Installation

To install a pair of S-Video Baluns or S-Video with Dual-Audio Baluns, follow the steps below.

CAUTION!

Do *not* attempt to open the baluns' housings. There are no user-serviceable parts inside.

1. Make sure that the video-destination device is not too far away from the video-source device (refer to the Maximum Distance specification in **Chapter 1**). If the destination device is beyond the reach of the source balun, the video signal the device receives will be weak or nonexistent.

2. Follow the manufacturer's instructions for turning off power to the video equipment you will be attaching, and for disconnecting that equipment from AC power and from all other devices.

3. Make certain that the modular outlets and cross-connects to which you will connect the baluns are configured properly and are labeled so that the circuit can be identified.

CAUTION!

Do *not* connect the balun to a telecommunication outlet wired to unrelated equipment. Making such a connection may damage the equipment and/or the balun. Make sure that all wiring is straight-through-pinned.

4. Verify that the twisted-pair circuit you want to use is not already being used for other LAN or telephone equipment.

5. Connect the balun to the S-Video port on the equipment you are attaching it to. If you're installing the S-Video with Dual-Audio Balun, connect the audio connectors to the audio source via RCA audio/video jumper cables.

CAUTION!

Do *not* mount the balun over equipment ventilation openings. Covering the openings may cause the equipment to overheat.

6. Connect a 4-pair CAT5 cable from the balun's RJ-45 8-position modular jack to the building's twisted-pair cabling. The IC447A requires two pairs; the IC449A requires four pairs if both S-Video and stereo audio are used.

7. At the destination point, connect another balun to the S-Video monitor and projector.

8. Connect a 4-pair CAT5 cable from the balun's RJ-45 connector to the appropriate modular wall outlet. See the typical applications in Figures 3-1 and 3-2. If the S-Video with Dual-Audio Balun is being installed, connect the audio connectors to the audio inputs (for example, loudspeakers) via RCA audio/video jumper cables.
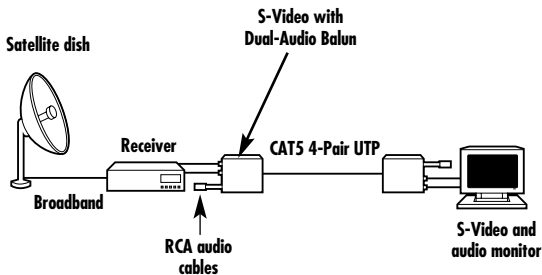

Figure 3-1. S-Video with Dual-Audio Balun satellite S-Video and audio application.
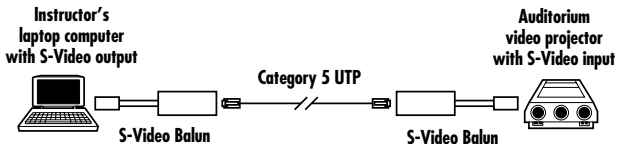
Figure 3-2. Two S-Video Baluns cabled together.

9. Reconnect and power up the video equipment. Adjust the image and audio settings of any attached monitor or projector as necessary.

Your balun system should be ready for continuous operation.

4. Troubleshooting

4.1 Things To Try If Problems Occur

If at any time your S-Video Balun or S-Video with Dual-Audio Balun system does not seem to be working properly, take these steps:

1. Following the manufacturer's instructions, perform diagnostics on your video equipment.

2. If this doesn't solve the problem, check all cable connections and the integrity and pinning of your site wiring. Check for reverse polarity; the baluns do not autosense or autocorrect polarity.

3. You might be trying to transmit the video signals across too great a length of cable. The maximum distance over which the baluns can transmit and receive video signals depends on your cable and your video equipment; refer to the Maximum Distance specification in **Chapter 1**.

4. Make sure that the patch cord you are running between the balun and your site's wiring system is the correct cable type and is properly pinned (see the Cable Required specification in **Chapter 1**).

5. If possible, replace the baluns involved in the problem with baluns that are known to be working, one at a time. If at any point the problem goes away, there is probably a defect in the balun you just replaced.

6. If you still cannot diagnose the problem, call Black Box for technical support as described in the next section.

4.2 Calling Black Box

If you determine that your balun is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box at 724-746-5500.

Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- the nature and duration of the problem.

- when the problem occurs.

- the components involved in the problem.

• any particular application that, when used, appears to create the problem or make it worse.

4.3 Shipping and Packaging

If you need to transport or ship your balun:

• Package it carefully. We recommend that you use the original container.

• If you are shipping the balun for repair, make sure you include everything that came in the original package. Before you ship, contact Black Box to get a Return Authorization (RA) number.

◆ BLACK BOX®
NETWORK SERVICES

1000 Park Drive • Lawrence, PA 15055-1018 • 724-746-5500 • Fax 724-746-0746